ORDER NO. TD94040485C2

Service Manual

Mini Cassette

Stereo Cassette Player DOLBY SYSTEM* **RQ-X10**

Colour

(K)...Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(K)
(EB)	Great Britain.	

MECHANISM SERIES : AR20

SPECIFICATIONS/ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ
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TERMINAL GUIDE OF IC`S, TRANSISTORS AND DIODES/ЦОКОЛЕВКА МИКРОСХЕМ, ТРАНЗИСТОРОВ И ДИОДОВ
MECHANISM PARTS LOCATION/РАСПОЛОЖЕНИЕ ЧАСТЕЙ КАССЕТНОГО МЕХАНИЗМА
REPLACEMENT PARTS LIST/СПИСОК ЗАПАСНЫХ ЧАСТЕЙ
CABINET PARTS LOCATION/РАСПОЛОЖЕНИЕ ЧАСТЕЙ КОРПУСА
PACKAGING/УПАКОВКА

Panasonic®

■ SPECIFICATIONS

Power Requirement:	Battery; with one "AA" size (R6/LR6) battery (DC: 1.5V)
	AC; with optional AC adaptor RP-AC11
Power Output:	5 mW + 5 mW (Max).
Input:	DC IN; 1.5V (⊖-⊙-⊕)
Output:	Headphones; 20Ω (ϕ3.5)
Dimensions:	109.7(W)×80.9(H)×28.6(D)mm
Weight:	160.2g (without batteries)
Frequency Response:	31.5 ~ 14,000Hz (with a normal tape)
(–6dB)	31.5 ~ 14,000Hz (with a CrO_2 type tape)
	31.5 ~ 14,000Hz (with a Metal tape)
Tape Speed:	4.8cm/s
Track System:	4-track 2-channel stereo playback

Notes:

1. Weights and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

※ Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

■ MEASUREMENTS AND ADJUSTMENTS

● ADJUSTMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ADJUSTMENT	
1. Set volume control to maximum. 2. Set Dolby NR Switch to OFF. 3. Set Metal/normal switch to NORMAL. 4. Set S-XBS Switch to OFF.	5. Set hold switch to OFF. 6. Set power source voltage to 1.5V DC. 7. Output of signal generator should not be higher than necessary to obtain an output reading.

• CONTROL POSITIONS AND EQUIPMENT USED

1. Frequency counter

● TAPE SECTION

ITEM	TEST TAPE	MEASUREMENT POINT	ADJUSTMENT POINT	PROCEDURE
Tape speed	QZZCWAT (3kHz, −10dB)	Connect the frequency counter to Headphones jack (20Ω) (Refer to Fig. 1)	VR2 (Refer to Fig. 2)	Playback the central part of the tape and adjust VR2 so that the tape speed is as follows. Forward: 3000 ± 10Hz Reverse: 2940~3060Hz Make sure that the frequency range in within ±60Hz for between "Forward" and "Reverse" mode.

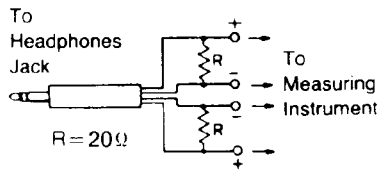


Fig. 1

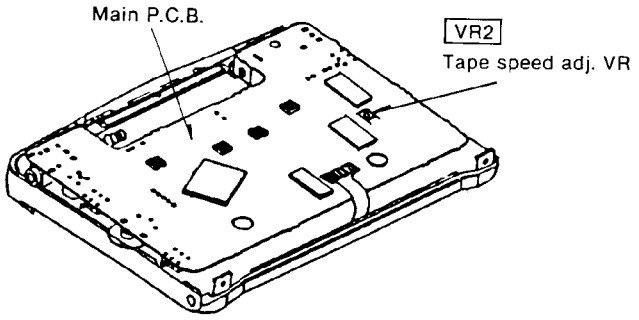


Fig. 2

■ HOW TO CHECK OPERATIONS DURING DISASSEMBLY AND SERVICING

1. Cassette section

- Check operations during disassembly following the steps.

1) Set the condition as shown in Fig. 1 in accordance with Disassembly Instructions. (DO NOT remove the solders on the head FPC.)
2) Connect the PCB and motor and rotary switch with the extension cord (RFKZ0002).
3) Short the short land with a soldering and then short-circuit them.
   - Short the short land Ⓐ for Power supply of AMP ON.
   - Short the short land Ⓑ for Power supply of motor ON.
   - Short the short land Ⓒ for Microcomputer reset.
   - Short the short land Ⓓ for Power supply of motor CCW.
   - Short the short land Ⓔ for Open/Close SW: ON.

   Note: See next page for the points to be short-circuited.
4) Connect the battery (−) terminal to the mechanism chassis earth with a lead wire.
5) Manually operate the rotary switch gear when checking the FWD/REV/FF/REW operation.
   - Rotate manually the rotary switch gear (Fig 1-1) as the arrow direction shown until the checking mode you need direct the pointer.
6) Connect the battery (+) terminal and the battery (−) terminal foil to the power source (DC 1.5V) with a lead wire. (Fig. 1)

Notes:

① You have to turn off the power when you want to change mechanism mode.
② Even if the mechanism unit is switched to the REV mode in Step 6, the head change-over switch (IC1) will remain in the FWD position, so set the FWD mode to check the audio.
Before checking the operation problems and adjustments, be sure to release the hold state.
(Hold switch (S3): "OFF")
③ After checking,
unsolder the short land Ⓐ, Ⓑ, Ⓒ, Ⓓ and Ⓔ.

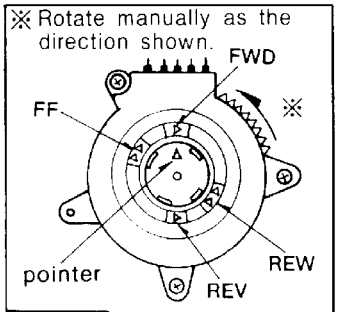
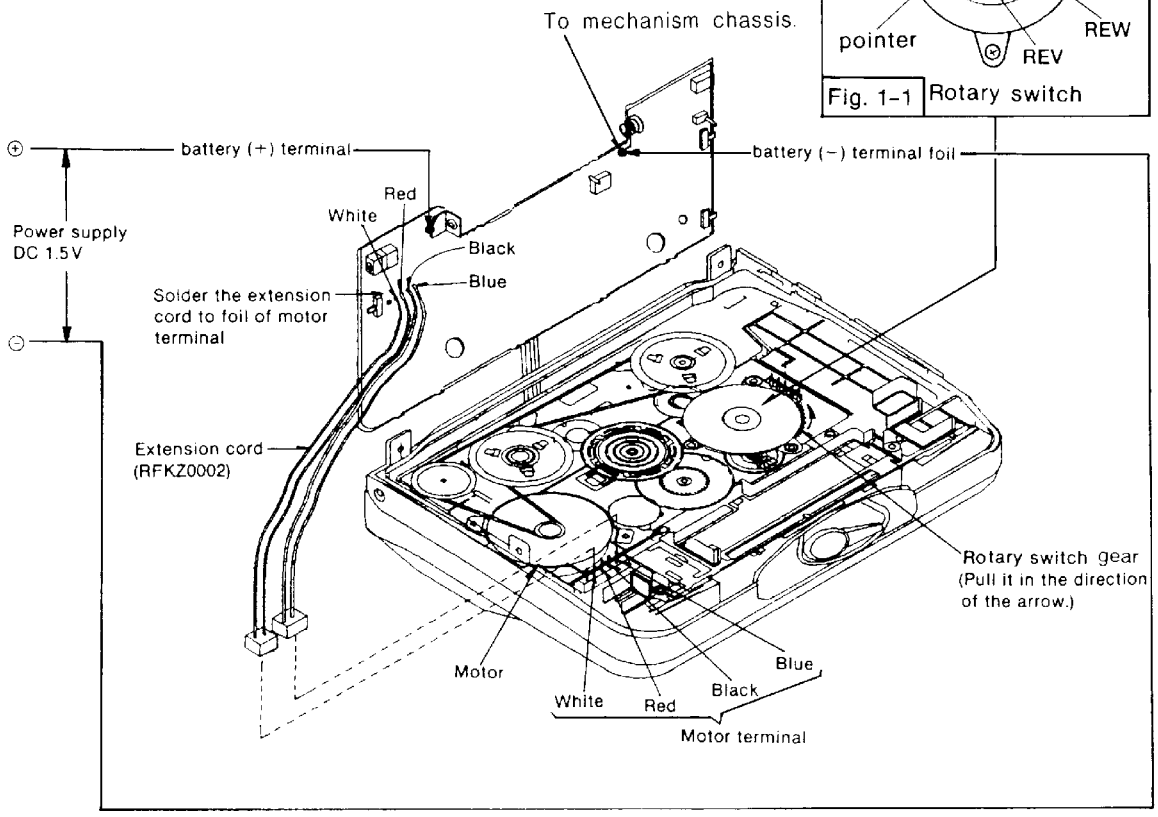
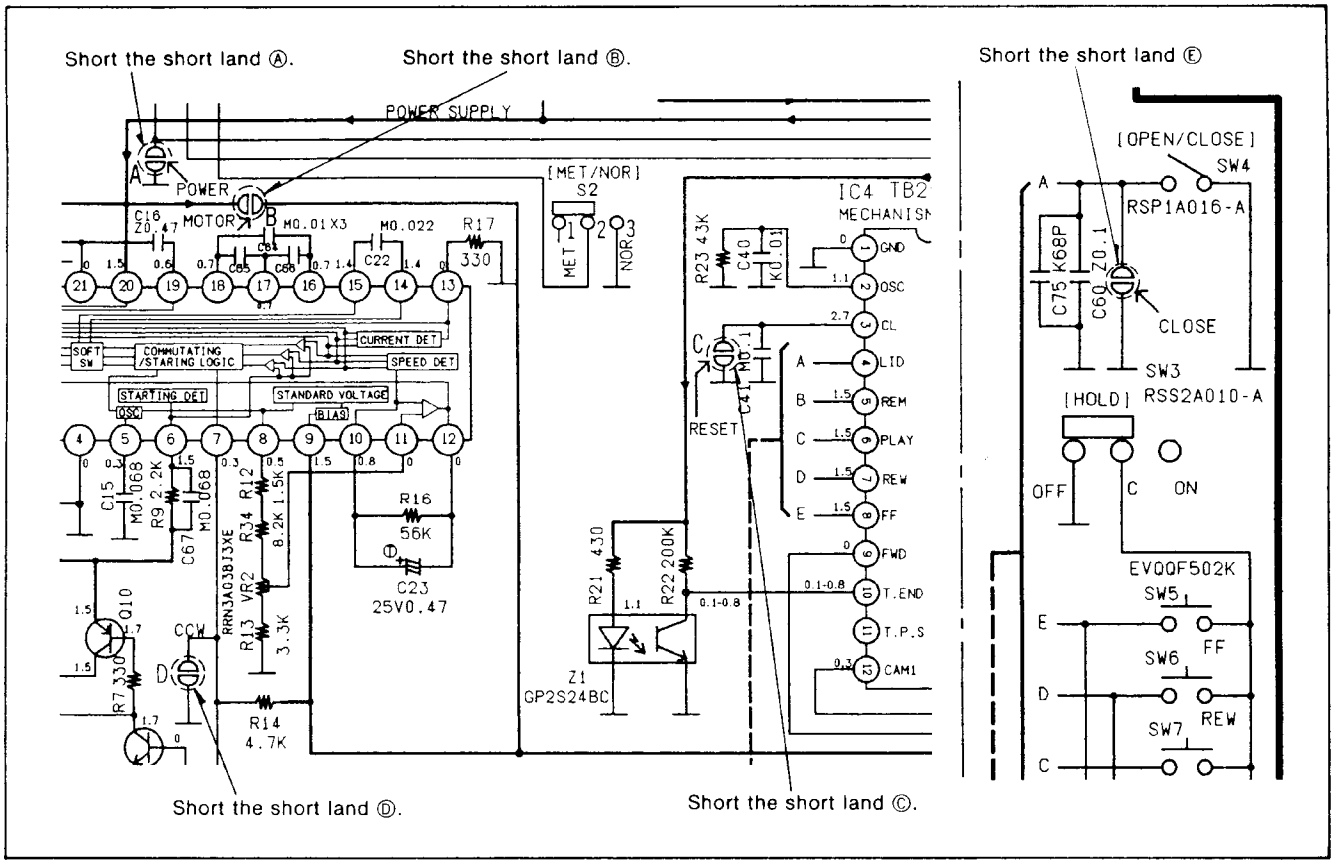


Fig. 1-1 Rotary switch

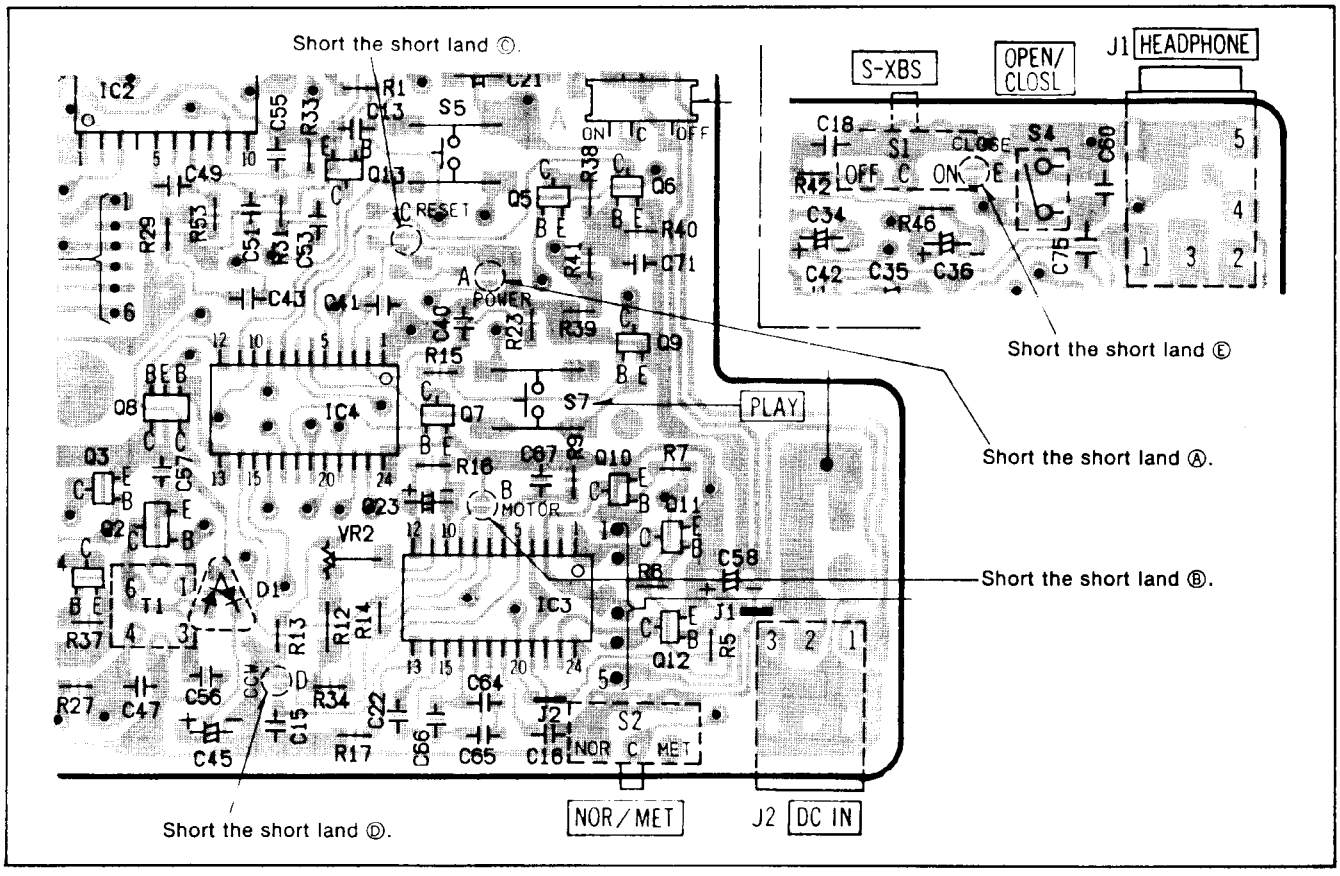


• Short points

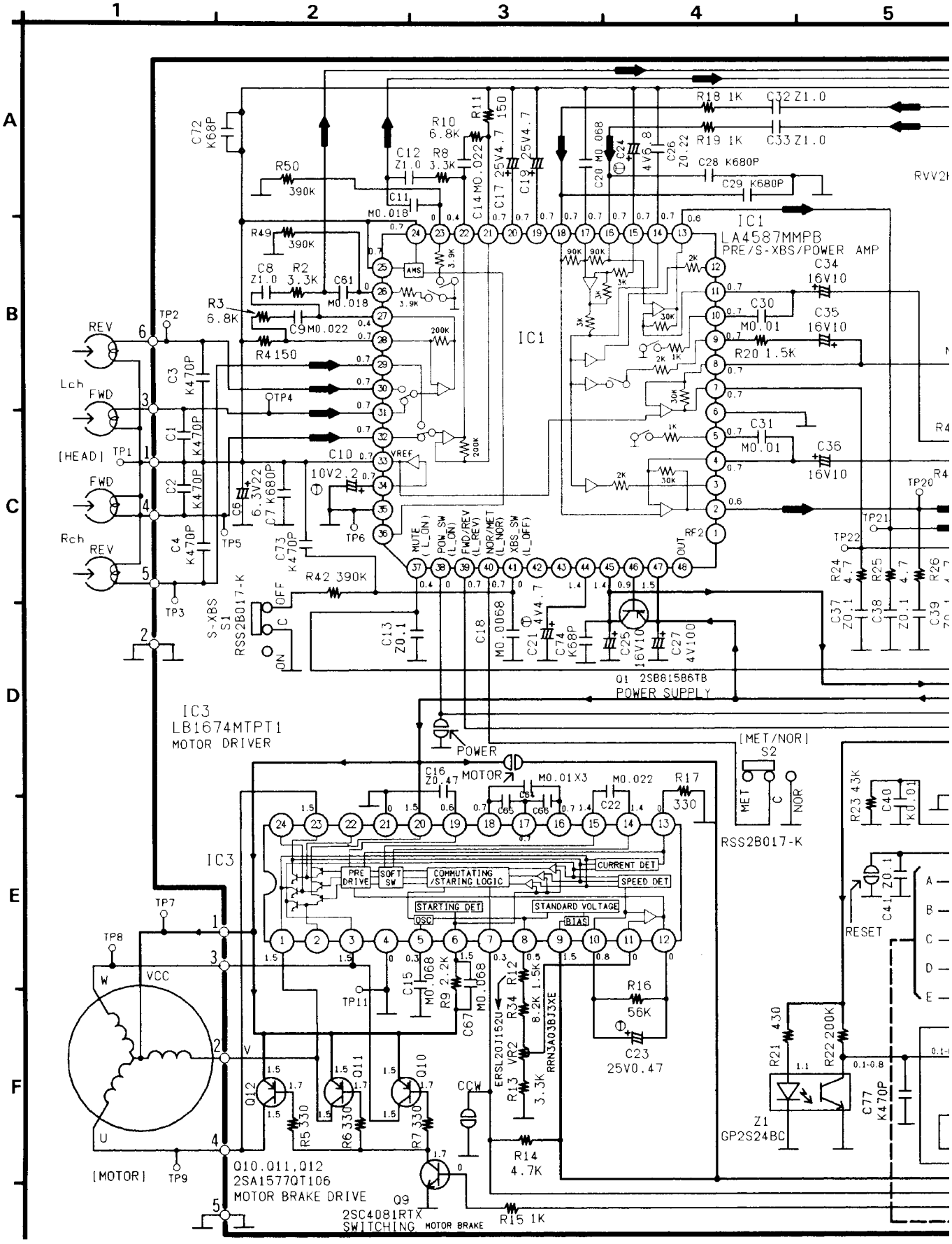
SCHEMATIC DIAGRAM

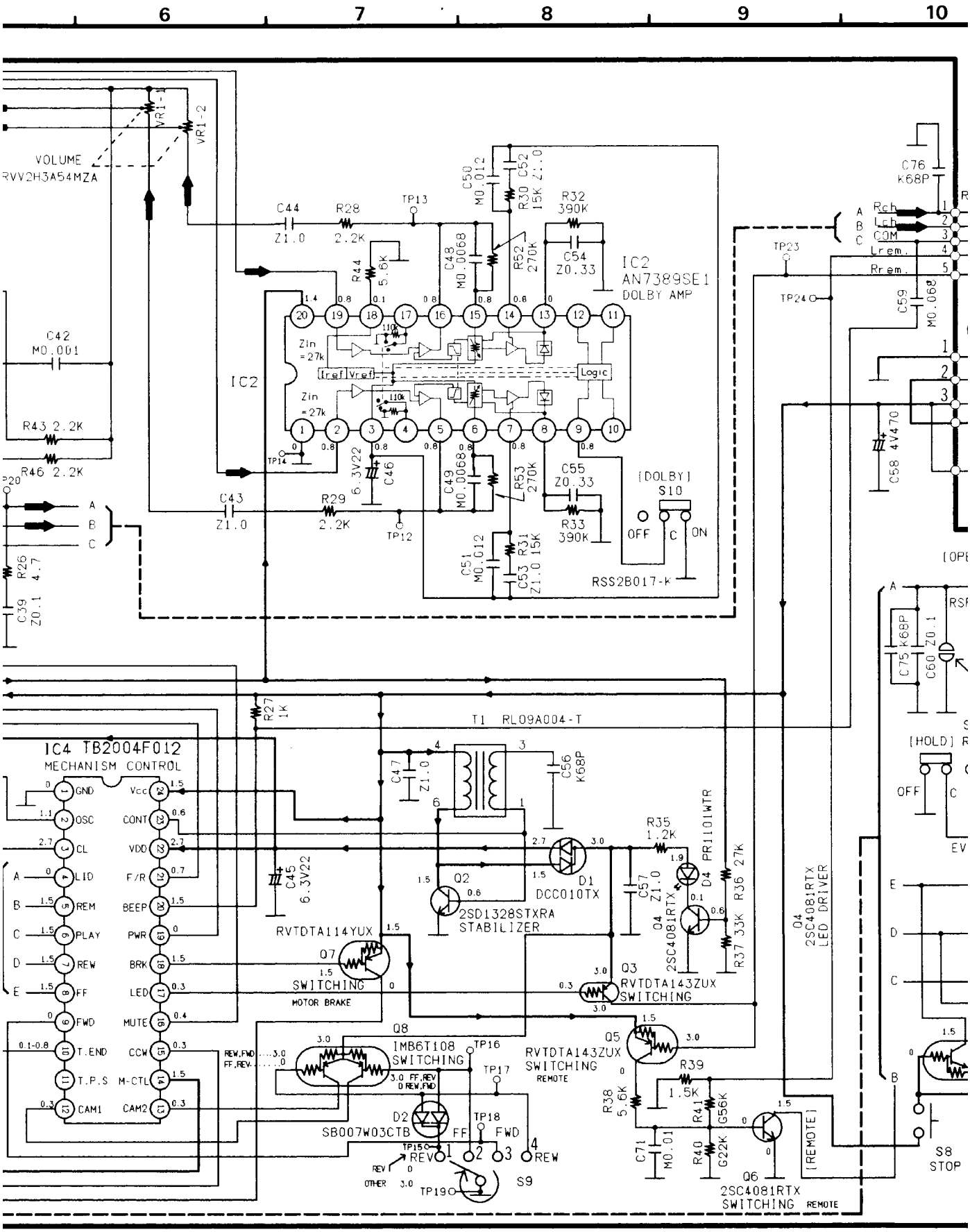


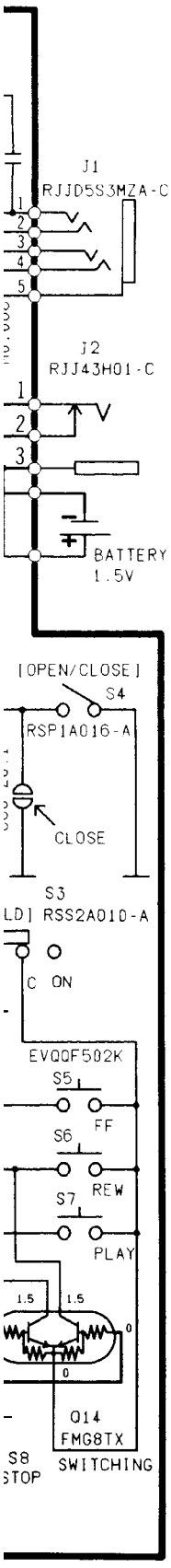
PRINTED CIRCUIT BOARD



■SCHEMATIC DIAGRAM




6
7
8
9
10
VOLUME
RVV2H3A54MZA
VR1-1
VR1-2
IC2
AN7389SE1
DOLBY AMP
IC4 TB2004F012
MECHANISM CONTROL
T1 RL09A004-T
RSS2B017-K
[DOLBY]
S10
OFF
ON
2SD1328STXRA
STABILIZER
DCC010TX
PR1101WTR
RVTDTA114YUX
SWITCHING
MOTOR BRAKE
RVTDTA143ZUX
IMB6T108
SB007W03CTB
2SC4081RTX
LED DRIVER
REMOTE
[REMOTE]
[HOLD]
S8
STOP
S9
REV
FWD
REW
FF
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
TP23
TP24



Notes:

- S1 : S-XBS switch in "OFF" position.
- S2 : Metal/normal switch in "METAL" position.
- S3 : Hold switch in "OFF" position.
- S4 : Open/close switch in "OPEN" position.
- S5 : Fast foward switch in "OFF" position.
- S6 : Rewind switch in "OFF" position.
- S7 : Play switch in "OFF" position.
- S8 : Stop switch in "OFF" position.
- S9 : Rotary swich in " REV " position.
  1...REV, 2...FF, 3...FWD, 4...REW.
- S10 : Dolby NR switch in "ON" position.

- VR1-1,
  VR1-2 : Volume control VR.
- VR2 : Tape speed adjustment VR.
- DC voltage measurements are taken with electronics voltmeter from negative terminal of battery.
  No mark...Playback.
- Battery current: No signal.....190 mA (VR: MIN)
  Maximum output.....210 mA (VR: MAX)

- **This schematic diagram may be modified at any time with the development of new technology.**

: PLAYBACK SIGNAL
: ⊕ B LINE

■ REPLACEMENT PARTS LIST

Notes:(T)Indicates parts that are supplied by TAMACO.

Ref No.	Part No.	Part Name & Description	Per Set	Remarks (T):TAMACO
		INTEGRATED CIRCUITS, TRANSISTORS AND DIODES		
IC1	LA4587M	I.C.PRE/S-XBS/POWER AMP	1	(T)
IC2	AN7389SE1	I.C.DOLBY	1	(T)
IC3	LB1674MTPT1	I.C.MOTOR DRIVE	1	(T)
IC4	TB2004F012	I.C.MECH.CONTROL	1	(T)
Q1	2SB815B6TB	Transistor	1	(T)
Q2	2SD1328STXRA	Transistor	1	
Q3,5	RVTDTA143ZUX	Transistor	2	(T)
Q4,6,9	2SC4081RTX	Transistor	4	(T)
Q7	RVTDTA114YUX	Transistor	1	(T)
Q8	IMB6T108	Transistor	1	(T)
Q10,11 ,12	2SA1577QT106	Transistor	3	(T)
Q14	FMG8TX	Transistor	1	(T)
D1	DCC010TX	Diode	1	(T)
D2	SB007W03CTB	Shottcky Diode	1	(T)
D4	PR1101WTR	Chip L.E.D	1	(T)
		TRANSFORERS		
T1	RL09A004-T	Transformer	1	(T)
		VARIABLE RESISTOR		
VR1	RVV2H3A54MZA	V.R.Volume	1	(T)
VR2	RRN3A03BJ3XE	V.R.Tape Speed	1	(T)
		PHOTO COUPLER		
Z1	GP2S24BC	Photo Coupler	1	(T)
		SWITCHES		
S1	RSS2B017-K	SW,S-XBS	1	(T)
S2	RSS2B017-K	SW,Tape(Met/Nor)	1	(T)
S3	RSS2A010-A	SW,Hold	1	
S4	RSP1A016-A	SW,(Open/Close)	1	(T)
S5	EVQQF502K	SW,FF	1	(T)
S6	EVQQF502K	SW,Rew	1	(T)
S7	EVQQF502K	SW,Play	1	(T)
S8	EVQQF502K	SW,Stop	1	(T)
S9	RSR5D001-A	SW,Rotary	1	(T)
S10	RSS2B017-K	SW,Dolby	1	(T)
		JACKS		
JK1	RJJD5S3MZA-C	Jack, Headphones	1	
JK2	RJJ43H01-C	Jack, DC IN	1	

■RESISTORS & CAPACITORS PARTS LIST

Notes:(T)Indicates parts that are supplied by TAMACO

Ref No.	Part No.	Remarks (T):TAMACO
RESISTORS (Value is in Ohms)		
R2,8,13	ERJ6GEYJ332V	
R3,10	ERJ6GEYJ682V	
R4,11	ERJ8GEYJ151V	
R5,6,7,17	ERJ6GEYJ331V	
R9,28,29,43 46	ERJ6GEYJ222V	
R12	ERSL20J152U	(T)
R14	ERJ6GEYJ472V	
R15,18,19,27	ERJ6GEYJ102V	
R16	ERJ6GEYJ563V	
R20,39	ERJ6GEYJ152V	
R21	ERJ6GEYJ431V	
R22	ERJ6GEYJ204V	
R23	ERJ6GEYJ433V	
R24,25,26	ERJ6GEYJ4R7V	
R30,31	ERJ6GEYJ153V	
R32,33,42,49,50	ERJ6GEYJ394V	
R34	ERJ6GEYJ822V	
R35	ERJ6GEYJ122V	
R36	ERJ6GEYJ273V	
R37	ERJ6GEYJ333V	
R38,44	ERJ6GEYJ562V	
R40	ERJ6GEYJ223V	
R41	ERJ6GEYJ563V	
R52,53	ERJ6GEYJ274V	
CHIP JUMPER		
RJ1,2	ERJ6GEY0R00V	

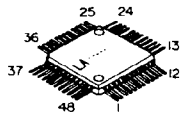
Ref No.	Part No.	Remarks (T):TAMACO
CAPACITORS		
C1,2,3,4,73,77	ECUV1H471KBN	
C6,45,46	ECEA0JKS220I	
C7,28,29	ECUV1H681KBN	
C8,12,32,33,43,44,47,52,53,57	ECUVNC105ZFN	
C9,14,22	ECUV1C223MBN	
C10	RCST1AY225RE	
C11,61	ECUV1C183MBN	(T)
C13,37,38,39,41,60	ECUV1C104ZFN	
C15,20,59,67	ECUV1C683MBN	
C16	ECUV1C474ZFN	
C17,19,	ECEA1EKS4R7I	
C18,48,49	ECUV1H682MBN	
C21	RCST0GY475RE	
C23	RCST1EY474RE	(T)
C24	RCSX0GY685RE	(T)
C25,34,35,36	ECEA1CKS100I	
C26	ECUV1E224ZFN	
C27	ECEA0GKS101I	
C30,31,64,65,66,71	ECUV1E103MBN	
C40	ECUV1E103KBN	
C42	ECUV1H102MBN	
C50,51	ECUV1C123MBN	(T)
C54,55	ECUV1C334ZFN	
C56,72,76	ECUV1H680KCN	
C58	ECEA0GKS471I	
C74,75	ECUV1E680KCM	(T)

■ TERMINAL FUNCTION OF IC

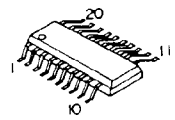
• IC4 (TB2004F012): Mechanism control

Pin No.	Mark	I/O Division	Function
1	GND	—	GND terminal
2	OSC	I/O	System clock terminal fosc=3.2kHz
3	CL	I	Clear (RESET) terminal
4	LID	I	Detection signal whether the cassette tape is inserted
5	REM	I	Inputs the remote control signal
6	PLAY	I	Inputs the mechanism operation signal (PLAY) At low: PLAY
7	REW	I	Inputs the mechanism operation signal (REW) At low: REW
8	FF	I	Inputs the mechanism operation signal (FF) At low: FF
9	FWD	I	Inputs the mechanism status detection signal (FWD) At low: FWD
10	T·END	I	Inputs the signal for the derection of tape rotation. When the pulse signal is input: The current mode remains set as the tape is rotating. No pulse signal: Stops or starts reverse playback as the tape has stopped rotating (ie, reched the end)
11	TPS	I	Input the TPS control signal.
12	CAM 1	I	Inputs the mechanism status detection signal (FF/REV) At high: FF At cam 2 high: REV
13	CAM 2	I	Inputs the mechanism status detection signal (REW/REV) At high: REW At cam 1 high: REV
14	M-CTL	O	Outputs the motor drive signal (MOTOR ON/OFF). At high: ON At low: OFF
15	CCW	O	Outputs the reversing motor drive control signal At high: REV At low: FF
16	MUTE	O	Outputs the muting signal At low: muting ON
17	LED	O	Outputs the remote control LED signal At low: LED ON
18	BRK	O	Outputs the mechanism operation signal (STOP). At low: STOP
19	POWER	O	Outputs the power switching signal At low: ON
20	BEEP	O	Beep generation terminal of remote control operation
21	F/R	O	FWD/REV select terminal At high: FWD ON At low: REV ON
22	VDD	I	Power supply terminal
23	CONT	O	Outputs the DC-DC converter drive signal
24	VCC	I	Power supply terminal

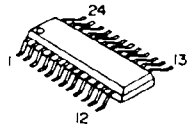
• Terminal guide of IC's, transistors and diodes



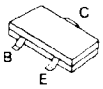
IC1



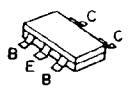
IC2



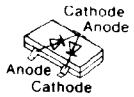
IC3,4



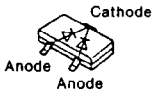
Q1~7,9~12.



Q8,14



D1



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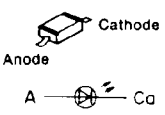
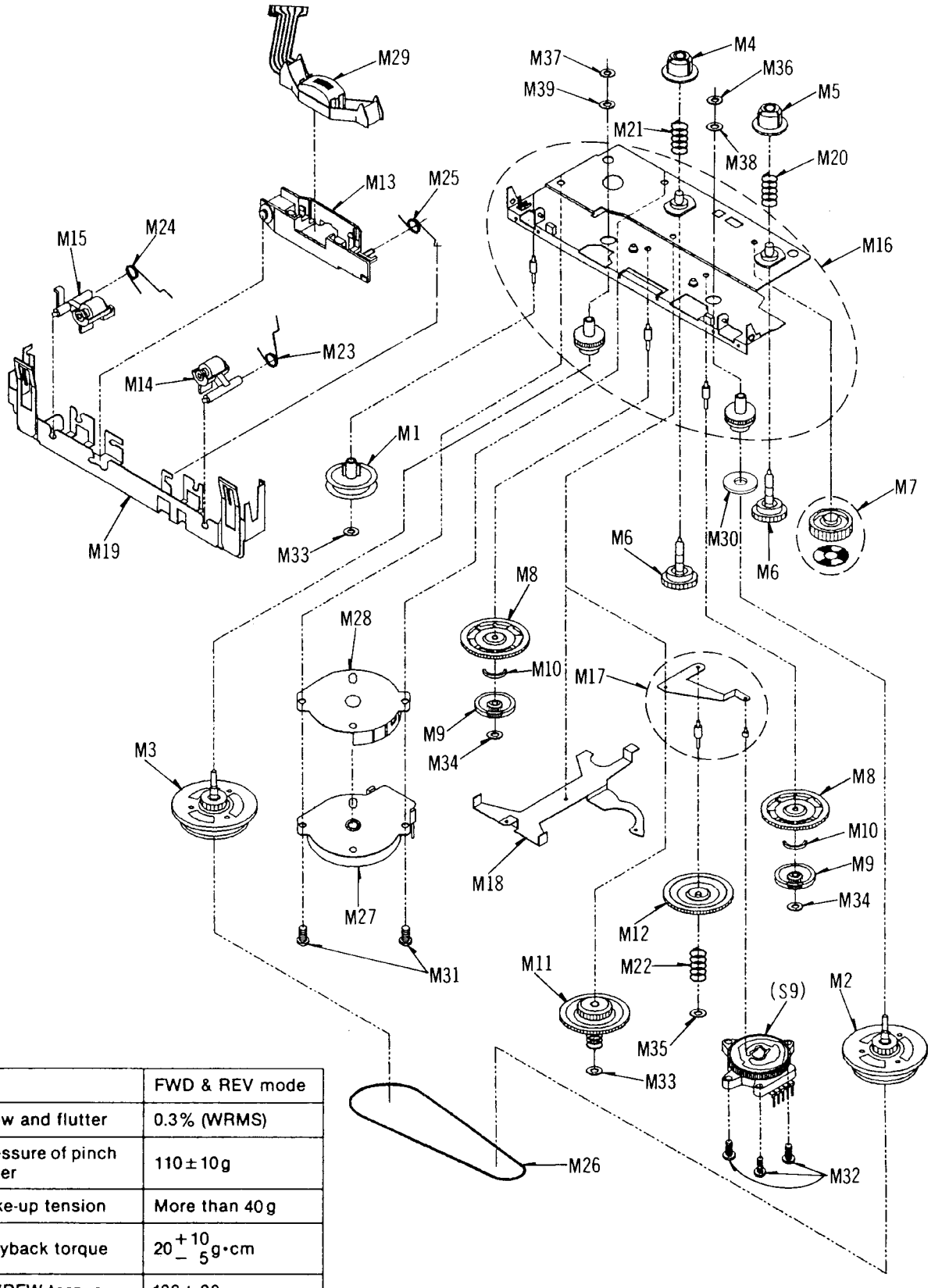


D4

■ MECHANISM PARTS LOCATION



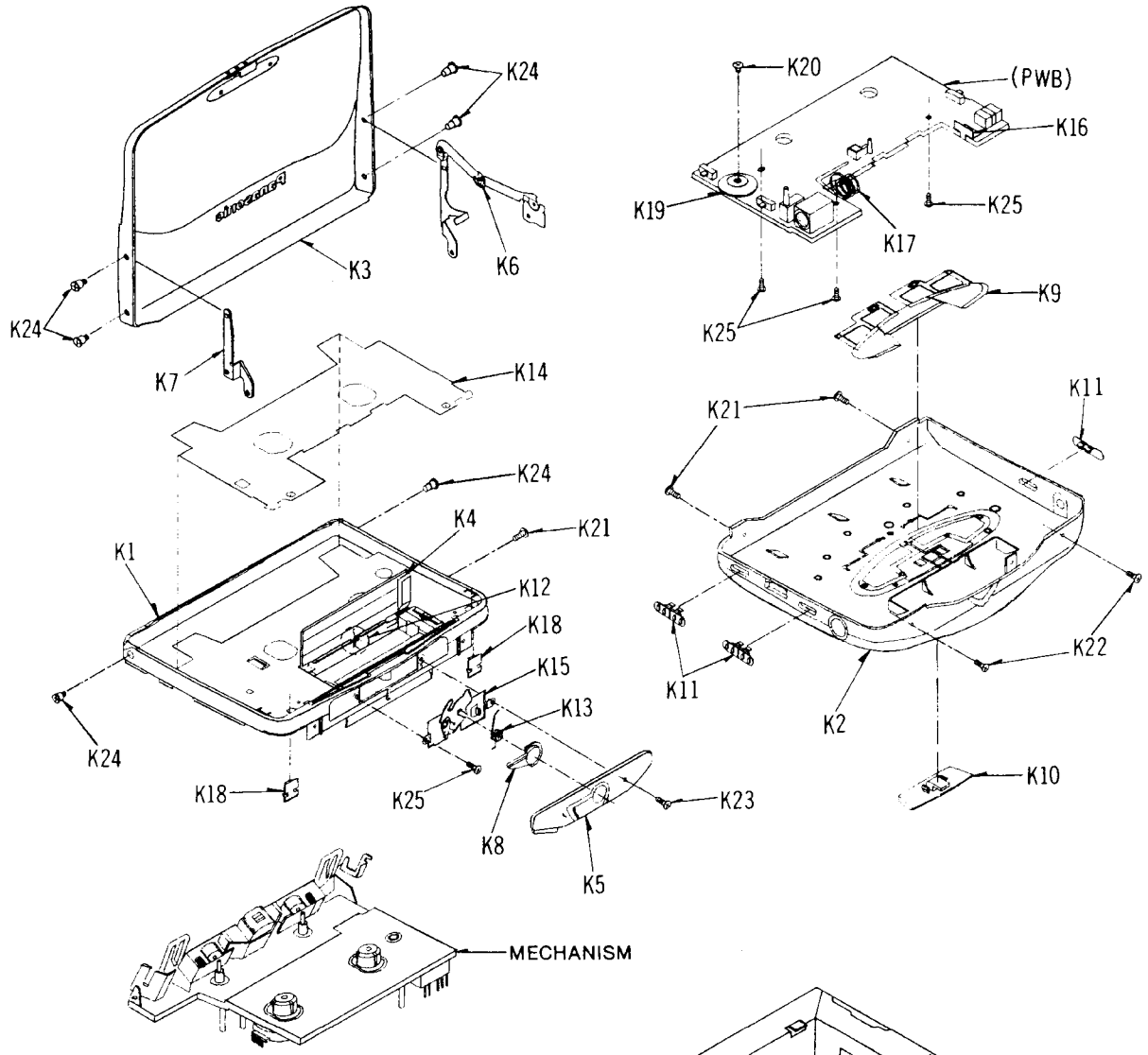
	FWD & REV mode
Wow and flutter	0.3% (WRMS)
Pressure of pinch roller	110±10g
Take-up tension	More than 40g
Playback torque	20^{+10}_{-5}g·cm
FF/REW torque	130±30g·cm

■ REPLACEMENT PARTS LIST

Notes:(T)Indicates parts that are supplied by TAMACO

Ref No.	Part No.	Part Name & Description	Per Set	Remarks (T):TAMACO
	MECHANICAL PARTS			
M1	RDP0069	Center Pulley	1	(T)
M2	RFKRQX10EA	Flywheel F Ass'y	1	(T)
M3	RFKRQX10EB	Flywheel R Ass'y	1	(T)
M4	RDR0025	Reel Cap (R)	1	(T)
M5	RDR0026	Reel Cap (L)	1	(T)
M6	RDG0274	Reel Gear	2	(T)
M7	RFKRQX10EC	Idler Gear Ass'y	1	(T)
M8	RDG0276	Change Gear A	2	(T)
M9	RDG0277	Change Gear B	2	(T)
M10	RMQ0434	Changing Plate	2	(T)
M11	RFKRQX10ED	Friction Gear Ass'y	1	(T)
M12	RDG0280	Operation Gear	1	(T)
M13	RML0335	Head Arm	1	(T)
M14	RFKRQX10EE	Pinch Roller Arm Ass'y F	1	(T)
M15	RFKRQX10EF	Pinch Roller Arm Ass'y R	1	(T)
M16	RFKRQX10EG	Chassis Ass'y	1	(T)
M17	RFKRQX10EH	Gear Lever	1	(T)
M18	RML0339	Change Lever	1	(T)
M19	RFKRQX10EJ	Head Block Spacer	1	(T)
M20	RMB0353	Reel Spring F	1	(T)
M21	RMB0354	Reel Spring R	1	(T)
M22	RMB0356	Operation Gear Spring	1	(T)
M23	RMB0357	Pinch Arm Spring F	1	(T)
M24	RMB0358	Pinch Arm Spring R	1	(T)
M25	RMB0359	Head Arm Spring	1	(T)
M26	RDV0032	Belt	1	(T)
M27	BHL2B1CRA	Motor	1	(T)
M28	RSC0384	Shield Plate	1	(T)
M29	RBR4CY017-M	Head Ass'y	1	(T)
M30	RMQ0490	Bush	1	(T)
M31	RHD14044-K	Screw (Motor)	2	(T)
M32	RHD14043	Screw (Rotary Switch)	3	(T)
M33	RHW10003	Washer	2	(T)
M34	RHW17009	Washer	2	(T)
M35	RHW13012	Washer	1	(T)
M36	RHW11004	Washer	1	(T)
M37	RHW12015	Washer	1	(T)
M38	RHW13009	Washer	1	(T)
M39	RHW13010	Washer	1	(T)
	CABINET PARTS			
K1	RKMT0007-S	Middle Cabinet	1	(T)
K2	RKST0007-K	Rear Cabinet	1	(T)
K3	RFKLQX10EA	Cassette Lid Ass'y	1	(T)
K4	RKKT0005-S	Battery Cover	1	(T)
K5	RKQT0001-S	Upper Cabinet	1	(T)
K6	RFKNQX10EA	Link Unit Ass'y	1	(T)
K7	RMAT0002	Basic Angle (R)	1	(T)
K8	RGWT0005-S	Open Knob	1	(T)
K9	RGUT0018-H	Deck Button	1	(T)
K10	RGVT0011-H	Hold Knob	1	(T)
K11	RGVT0012-K	S-XBS/Dolby NR/Tape Knob	3	(T)
K12	RMBT0001	Spring	1	(T)
K13	RMBT0002	Return Spring	1	(T)
K14	RGQT0003-K	Tape Plate	1	(T)
K15	RFKDQX10EA	Shell Lock Ass'y	1	(T)
K16	RJCT30005	Battery Terminal (+)	1	(T)
K17	RJCT70005	Battery Terminal (-)	1	(T)
K18	RMCT0002	Pack Spring	2	(T)
K19	RGWT0001-K	Volume Knob	1	(T)
K20	XSH14+4	Screw (VR)	1	(T)
K21	RHDT0001-K	Screw	4	(T)
K22	RHDT0002-K	Screw	2	(T)
K23	RHDT0002-S	Screw	1	(T)
K24	RHDT0003-K	Screw	7	(T)
K25	XTNR14+3	Screw	4	(T)
	ACCESSORY			
A1	RFEV124P-K1S	Inner Phones	1	(T)
A2	RQTT0074-E	Instruction Book	1	(T)
	PACKING MATERIALS			
P1	RPKT0029A	Decoration Box	1	(T)
P2	RPKT0029B	Decoration Box	1	(T)
P3	RPFT0007	Set Bag	1	(T)

■CABINET PARTS LOCATION



■PACKAGING